

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 791 789 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
07.01.2004 Bulletin 2004/02

(51) Int Cl.7: **F24F 1/02**

(21) Application number: **97102912.9**

(22) Date of filing: **21.02.1997**

(54) **Discrete type air conditioner**

Klimaanlage vom diskreten Typ

Dispositif de climatisation du type discret

(84) Designated Contracting States:
ES GR IT PT

(30) Priority: **22.02.1996 JP 6215396**

(43) Date of publication of application:
27.08.1997 Bulletin 1997/35

(73) Proprietor: **MATSUSHITA ELECTRIC INDUSTRIAL
CO., LTD.
Kadoma-shi, Osaka-fu (JP)**

(72) Inventors:

- **Hatano, Koji**
1006, Oaza Kadoma, Kadoma-shi, Osaka-ku (JP)
- **Isemura, Nobuhisa**
1006, Oaza Kadoma, Kadoma-shi, Osaka-ku (JP)
- **Nagano, Masatoshi**
1006, Oaza Kadoma, Kadoma-shi, Osaka-ku (JP)

- **Matsumi, Hideki**
1006, Oaza Kadoma, Kadoma-shi, Osaka-ku (JP)
- **Nakanuma, Mitsuo**
1006, Oaza Kadoma, Kadoma-shi, Osaka-ku (JP)

(74) Representative: **Grünecker, Kinkeldey,
Stockmair & Schwanhäusser Anwaltssozietät
Maximilianstrasse 58
80538 München (DE)**

(56) References cited:

WO-A-98/36226 **US-A- 3 545 611**
US-A- 3 548 611 **US-A- 4 736 598**
US-A- 5 027 614 **US-A- 5 191 770**

- **PATENT ABSTRACTS OF JAPAN vol. 1997, no.
03, 31 March 1997 (1997-03-31) & JP 08 303820 A
(YASHIMA KOGYO KK;YAMAMOTO
KIMIYOSHI), 22 November 1996 (1996-11-22)**

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 0 791 789 B1

Description

Field of the Invention

[0001] The present invention relates to a discrete type air conditioner which consists of an indoor unit and an outdoor unit, and is used for conditioning temperatures and humidities of air in rooms.

Background of the Invention

[0002] First, description will be made of a configuration of an outdoor unit of a discrete type air conditioner with reference to FIG. 11. An outdoor unit main body 101 is configured as a box consisting of a base plate 102 which composes a bottom surface of the main body, side plates 103 which compose side surfaces of the main body, a rear plate (not shown) which composes a rear surface of the main body, a front plate which composes a front surface of the main body and a ceiling plate which composes a ceiling surface of the main body. Shown in FIG. 11 is a conventional example of outer unit which uses an outer box 106 having the side plates 103, the rear plate and the ceiling plate 105 which are integrated with one another.

[0003] The outdoor unit main body 101 has an interior which is partitioned by an acoustic plate 107 into a wind passage section 108 and a refrigerating cycle section 109. In the wind passage section, a fan motor stand 110 is disposed on the base plate 102 and a fan motor 111 is mounted on the fan motor stand 110. Further, a fan 112 is attached to the fan motor 111. By driving the fan 112, outdoor air is sucked into the outdoor unit main body 101 through outdoor air suction ports (not shown) formed in the rear surface and the side surfaces of the main body. The outdoor air passes through an outdoor heat exchanger 113, and then is exhausted out of the outdoor unit main body 101 through an outdoor air blow-off port (not shown) formed in the front surface of the main body.

[0004] A compressor 114, a throttle device (not shown), and pipes 115 for connecting these members, etc. are arranged in the refrigerating section 109. An electric power source board 117 is disposed in an upper portion of the refrigerating cycle section 109 for connecting electric parts 116, the fan motor 111 and the compressor 114 to an electric power source.

[0005] Disposed on the side of the outdoor unit main body are connecting valves 118 for connecting pipes extending from an indoor unit main body (not shown) and an electric power source board cover 119 for closing an opening formed for passing connecting electric wires extending from the indoor unit main body (not shown). Furthermore, legs 120 are laid under the bottom surface of the outdoor unit main body 101 for disposing the outdoor unit main body 101 on a horizontal plane.

[0006] Now, description will be made of a configuration of installation members for installing the outdoor unit

main body 101 on a vertical surface such as a wall and works for installation with this member.

[0007] An installation member 121 consists of wall fixing members 122, main body mounting members 123 and coupling sash bars 124. The coupling sash bars 124 are preliminarily adjusted so that a spacing between the main body mounting members 123 is matched with a spacing between the legs 120 under the outdoor unit main body 101. Then, the installation member 121 is tightened and fixed to a house wall surface using anchor bolts 125 and so on. Then, the outdoor unit main body 101 is mounted on the main body mounting members 123 of the installation member 121 attached to the wall surface. After fixing bolts 127 are passed through holes 126 formed in the legs 120 of the outdoor unit main body 101 and the main body mounting members 123 of the installation member 121, the bolts are tightened for fixing the outdoor unit main body 101 to the installation member 121. Then, the connecting pipes (not shown) extending from the main body of the indoor unit main body are connected to the connecting valves 118 and connecting electric wires (not shown) are connected to a power source terminal section (not shown) disposed in the electric power source board 117.

[0008] Then, description will be made of procedures for slight repairs such as replacements of the electric parts and the fan motor of the outdoor unit main body. When it is required to replace the fan motor 111 and/or the electric parts 116 which are accommodated in the outdoor unit main body 101, the ceiling plate 105, the side plates 103, the rear plate (not shown) and/or the front plate 104 are detached independently or in combination from the outdoor unit main body 101, thereafter the fan motor 111 and/or the electric parts 116 are replaced with new ones.

[0009] However, the configuration of the conventional discrete type air conditioner described above requires, at the stage to install it on the wall, precise mounting of the legs 120 of the outdoor unit main body 101 on the main body mounting members 123 of the installation member 121. Since the outdoor unit main body 101 contains heavy members such as the compressor 114, it is rather toilsome to mount it precisely onto the installation member 121 while adjusting its position. For installing the outdoor unit on a high location such as a wall surface of an upper floor, it is necessary to assemble a scaffold or hang down the outdoor unit from above with a rope, thereby requiring many hands.

[0010] Further, it is strongly desired to facilitate works for fixing the outdoor unit main body 101 to the installation member 121 since a worker is obliged to go outdoors for handling the legs 120 laid under the outdoor unit main body 101.

[0011] When a trouble is incurred in a part and repair is needed, it is necessary to detach the ceiling plate 105, side plates 103, the rear plate and/or the front plate 104 from the outdoor unit main body 101 even for slight repairs such as replacement of the electric parts 116 or

the fan motor 111. Since these parts cannot be disassembled by a worker standing indoors even when the outdoor unit is installed in the vicinity of a window, the worker is obliged to go outdoors, whereby it is strongly desired to facilitate the repair works.

[0012] Moreover, certain arrangement of the indoor unit and the outdoor unit obliges the pipes connecting the indoor unit to the outdoor unit to be disposed so as to wind the outdoor unit main body 101, thereby lowering aesthetic appearance of the discrete type air conditioner.

[0013] US 3,548,611 discloses an outside mounted room air conditioner having a main section which depends on a building wall below a window. It comprises a mounting arrangement which supports the main section and includes adjustable means for both moving the main section up and down and also plumbing the main section so that proper alignment between the main section and the window opening is easily afforded for the installation.

[0014] US 5,191,770 discloses an air conditioner system according to the preamble of claim 1 including a separate indoor and outdoor unit affixed to opposite sides of a building wall. A plurality of conduits extend through the wall for transferring heat exchange media and electrical media between the units.

Disclosure of the Invention

[0015] In view of the problems described above, it is a primary object of the present invention to facilitate works for installing an outdoor unit of a discrete type air conditioner onto a wall surface, to allow the works to be performed from indoors by utilizing a window, to facilitate works for slight repairs of the outdoor unit and improve aesthetic appearance of the air conditioner after the outdoor unit is installed.

[0016] The configuration of the discrete type air conditioner as claimed in claim 1 makes it possible to easily install the outdoor unit onto a wall surface, thereby remarkably facilitate the works for installation of the outdoor unit.

[0017] Furthermore, this configuration allows the connectors of the main body side installation members and connectors of the wall surface side installation member to be engaged with each other by mounting the outdoor unit obliquely on the wall surface side installation member attached to a wall surface and slidingly displacing the outdoor unit downward.

[0018] Accordingly, the outdoor unit can be installed on the wall surface from inside a room by utilizing a window. Even when the outdoor unit is to be installed on a wall surface of a high story, it is unnecessary to assemble a scaffold or hang down the outdoor unit with a rope, thereby allowing it to save hands.

[0019] An embodiment of the invention is configured to dispose main body side installation members for the outdoor unit from upper portions of a rear surface of the

outdoor unit toward lower portions thereof and form connectors which are open downward by folding back outward top ends of the main body side installation members.

[0020] An embodiment of the invention is configured so that main body side installation members attached to the outdoor unit and a wall surface side installation member to be attached to a house wall surface can be tightened to each other with tightening implements. This configuration allows the outdoor unit to be fixed to a wall surface. Moreover, a worker need not go outdoors through a window for fixing the outdoor unit and can easily carry out the fixing work.

[0021] An embodiment of the invention is configured to dispose spacers which have lengths adjustable with screws or the similar means in lower portions of main body installation members attached to the outdoor unit. These spacers hold the outdoor unit vertically in its installed condition. Further, these spacers facilitate to adjust an installation angle after the outdoor unit is installed. Moreover, the spacers prevent noise from being produced by inclined pipes.

[0022] According to an embodiment of the invention spacers which are disposed in lower portions of main body installation members attached to the outdoor unit are made of an elastic material such as rubber. This rubber spacers hinder vibrations from being propagated to a wall surface in an operating condition of the outdoor unit after it is installed. Accordingly, this invention makes it possible to lower noises produced by vibrations of the outdoor unit.

[0023] According to an embodiment of the invention, a partition plate which partitions an interior of the outdoor unit into a wind passage section and a refrigerating cycle section is fixed directly or by way of another part to a rear plate on a rear surface and a base plate on a bottom surface of the outdoor unit. This partition plate enhances strength of the outdoor unit main body.

[0024] An embodiment of the invention is configured to integrate a rear plate on a rear surface of an outdoor unit with a base plate on a bottom surface thereof. This configuration enhances strength of the outdoor unit main body while reducing a number of parts used for composing the outdoor unit.

[0025] An embodiment of the invention is configured to adopt an integral structure for a blower unit equipped with a fan, an air guider and an electric power source board disposed in the outdoor unit, and allow the blower unit to be taken out upward after a ceiling plate composing a ceiling surface of the outdoor unit is detached from the outdoor unit. This configuration makes it possible to take out the blower unit from above the outdoor unit after the ceiling plate is detached from the outdoor unit. Accordingly, this configuration remarkably facilitates repair works since no work other than detachment of the ceiling plate from the outdoor unit from indoor side is necessary to detach parts required for repairing a trouble in the blower unit.

[0026] An embodiment of the invention is configured to allow lead wires which are used for electrical connection between electric parts including a compressor disposed in an outdoor unit and an electric power source board to be connected to an electric connector disposed on the electric power source board. This configuration facilitates to connect and disconnect, from the electric power source board, the lead wires which are used for electrical connection between the electric parts such as the compressor and the electric power source board which are disposed in the outdoor unit. Accordingly, this configuration facilitates to connect and disconnect the lead wires, and prevents erroneous wiring from being made at stages to install and remove the blower unit into and out of the outdoor unit.

[0027] An embodiment of the invention is configured to form grooves in locations at which right and left ends of an air guider for a blower unit are to be positioned in the outdoor unit, and fit the right and left ends of the air guider into these grooves so that the blower unit can slide in a vertical direction along the grooves. Accordingly, this configuration allows the blower unit to be detached from the outdoor unit main body simply by pulling it out along the grooves, thereby improving operability of the blower unit or facilitating the detaching work.

[0028] According to an embodiment of the invention grooves in which right and left ends of an air guider for a blower unit are to be fitted in the outdoor unit are configured so as to be wider from lower portions to higher portions of the grooves. This configuration reduces frictional resistance in sliding the blower unit, thereby reducing a force required for removing the blower unit and facilitating the removing work.

[0029] An embodiment of the invention is configured to form a groove into which a lower end of an air guider for a blower unit is to be fitted at a location of a base plate with which the lower end of the air guider is brought in contact so that the groove holds the lower end of the air guider.

[0030] An embodiment of the invention is configured to form protruding portions and concave portions in right and left ends of an air guider for a blower unit in the outdoor unit and walls of grooves into which the air guider is to be fitted for positioning the air guider when it is fitted in its regular position in the outdoor unit. These protruding portions and concave portions fix the blower unit at its correct position, thereby enhancing an accuracy of a blower circuit.

[0031] An embodiment of the invention is configured to dispose, under a ceiling plate, a partition plate which partitions an upper portion of a wind passage section so that pipes connecting the outdoor unit to the indoor unit can be disposed in a space partitioned by the partition plate. This configuration permits disposing the pipes for connecting the outdoor unit to the indoor unit so that the pipes are free from unseemliness without degrading aesthetic appearance of the air conditioner after installation.

Brief Description of the Drawings

[0032]

FIGs. 1(a) and 1(b) are perspective views illustrating main members of an embodiment of the discrete type air conditioner according to the present invention in its disassembled condition and a wall surface side installation member of the air conditioner; FIG. 2 is a diagram descriptive of installation of the discrete type air conditioner shown in FIG. 1; FIG. 3 is a side view of the discrete type air conditioner shown in FIG. 1; FIG. 4 is a perspective view illustrating the discrete type air conditioner shown in FIG. 1 in a disassembled condition; FIG. 5 is a perspective view illustrating main members of another embodiment of the discrete type air conditioner according to the present invention in its disassembled condition; FIG. 6 is a perspective view of an electric power source board in an embodiment of the present invention; FIG. 7 is a diagram descriptive of main members in an embodiment of the discrete type air conditioner according to the present invention; FIG. 8 is a side view illustrating main members in an embodiment of the discrete type air conditioner according to the present invention; FIG. 9 is a diagram descriptive of main members in an embodiment of the discrete type air conditioner according to the present invention; FIGs. 10(a) and 10(b) are a partially exploded front view and a partially exploded perspective view illustrating the discrete type air conditioner according to the present invention; and FIG. 11 is a perspective view illustrating main members of a conventional example of discrete type air conditioner.

Description of Embodiments

[0033] Now, embodiments of the discrete type air conditioner according to the present invention will be described with reference to the accompanying drawings. As shown in FIGs. 1(a) and 1(b), installation members which are used for installing an outdoor unit main body 1 of the discrete type air conditioner on a house wall surface consist of main body side installation members 2a which are to be preliminarily attached to the outdoor unit main body 1 and a wall surface side installation member 2b which is to be preliminarily attached to the house wall surface.

[0034] Each of the main body side installation members 2a is composed of a main body connector 3, an erecting plate 3a perpendicularly rising rearward from a side of the main body connector 3, a guide portion 4 which is perpendicularly bent inward from a top end of

the erecting plate 3a and extends along the outdoor unit within a range from a top to a bottom of the outdoor unit, a hook-like connector 5 which is formed by folding a top end of the guide portion 4 rearward so as to reserve a space and open downward, and a coupling portion 6 which is formed by folding a top end of the main body connector 3 rearward.

[0035] The wall surface side installation member 2b is configured nearly in a channel form, and is composed of a wall surface connector 7 which is to be connected to a wall surface, a hook-like connector 8 which has a nearly U-shaped section and is open upward, and couplers 9 which are formed by extending right and left ends of the connector 8 and bending the extensions frontward. The two extensions 9 are formed so as to reserve a spacing 10 which is wider than a spacing 11 reserved, between both guide portions 4 of the two main body side installation members 2a attached to the outdoor unit main body 1.

[0036] Now, description will be made of procedures for installation on the wall surface. The main body side installation members 2a are connected and fixed to the outdoor unit main body by fitting screws 13 into holes 12 formed in the main unit connectors 3 and tightening the screws 13 into the outdoor unit main body 1.

[0037] The wall surface side installation member 2b is fixed to an outside wall surface which is located below a window or accessible from indoors by passing anchor bolts 15 through holes 14 formed in the wall surface connector 7 and tightening the anchor bolts into the wall surface.

[0038] Spacers 16 made of an elastic material such as rubber are disposed in lower portions of the guide portions 4 of the main body side installation members 2a. Since lengths of the spacers 16 can be adjusted by turning the screws, the lengths of the spacers 16 are adjusted according to a shape of the wall surface. Then, the outdoor unit main body 1 is lifted up, taken out through a window or the similar opening as shown in FIG. 2, and the outdoor unit main body 1 is obliquely mounted on the wall surface side installation member 2b (as shown in solid lines in FIG. 2) so that the guide portions 4 of the main body side installation members 2a are accommodated in the spacing 10 reserved between the two couplers 9.

[0039] Then, the outdoor unit main body 1 is gradually slid downward while being supported until the connectors 5 of the main body side installation members 2a are automatically caught by the connector 8 of the wall surface side installation member 2b. Since the outdoor unit main body 1 has a center of gravity located outside the position where the connectors 5 are caught by the connector 8, the outdoor unit main body 1 rotates around a fulcrum formed at the location where the connectors 5 are caught and a lower end of the outdoor unit main body 1 is brought into contact with the wall. However, the outdoor unit main body 1 is held in a vertical position since the spacers 16 have preliminarily been

adjusted so as to reserve an adequate distance from the wall surface as shown in FIG. 3. The spacers 16 which are made of the elastic material such as rubber absorb vibrations of the compressor, etc. and do not allow the vibrations to be propagated to the wall surface.

[0040] In the condition where the outdoor unit main body 1 is suspended by the wall surface side installation member 2b by way of the main body side installation members 2a, the couplers 6 of the main body side installation members 2a are overlapped with the couplers 9 of the wall surface side installation member 2b and holes 17 and 18 formed in the couplers 6 and the couplers 9 respectively are overlapped with each other. The main body side installation members 2a are tightened to the wall surface side installation member 2b by fitting screws into the overlapped holes 17 and 18.

[0041] The outdoor unit main body 1 is fixed to the wall surface by tightening and fixing the main body side installation members 2a which are fixed to the wall surface side installation member 2b which is fixed to the wall surface as described above.

[0042] Now, internal structure of the outdoor unit in the embodiment of the discrete type air conditioner according to the present invention will be described with reference to FIG. 4.

[0043] Since the outdoor unit main body 1 is supported on its rear surface when the outdoor unit main body 1 is installed on a wall surface as described above, it is necessary to impart sufficient mechanical strength to the outdoor unit main body, its rear surface in particular. Therefore, the outdoor unit main body 1 has an interior which is partitioned by a partition plate 21 into a wind passage section 19 and a refrigerating cycle section 20 in the embodiment of the present invention. The partition plate 21 is fixed to a rear plate (not shown) composing the rear surface of the outdoor unit main body 1 by way of an end plate 23 of an outdoor heat exchanger 22 and directly fixed to a base plate 24 composing a bottom surface.

[0044] By composing the outdoor unit main body 1 as described above, sufficient mechanical strength is imparted to the outdoor unit main body 1 when it is installed on a wall surface. Further, the partition plate 21 functions as a wall resisting a tensile force and provides required strength even when a heavy article such as the compressor 25 is mounted on the base plate 24.

[0045] The partition plate 21 can exhibit the same function and effect even when it is fixed directly to the rear plate and the base plate of the outdoor unit main body 1 in a manner which is not shown.

[0046] Another embodiment of the present invention will be described with reference to FIG. 5. On the rear of a base plate 24 composing a bottom surface of the outdoor unit main body 1, a rear plate portion 26 composing a rear surface of the outdoor unit 1 is formed integrally with the base plate 24 so as to erect vertically. Required strength can be obtained with a single member by selecting the composition of this embodiment.

[0047] Now, the blower unit disposed in the outdoor unit which is used in the embodiment of the discrete type air conditioner according to the present invention will be described with reference to FIG. 4.

[0048] A fan 27 which functions as a blast source for the wind passage section 19 is attached to a fan motor 28. The fan motor 28 is attached to an air guider 29 which portions a windward side from a leeward side by way of a fan motor stand 30. Disposed on an upper portion of the air guider 29 is an electric power source board 32 which accommodates electrical parts 31, lead wires 34 and an electric connector 35.

[0049] The air guider 29, the fan motor stand 30, the fan motor 28, the fan 27 and the electric power source board 32 are integrated so as to compose the blower unit 33. The blower unit 33 is inserted into the wind passage section 19 of the outdoor unit main body 1 from above. After the blower unit 33 is inserted into the outdoor unit main body 1, a ceiling cover (not shown) is attached to the outdoor unit main body 1 so as to cover its ceiling surface.

[0050] An electric connector 35 is used as shown in FIG. 6 so that the lead wires 34 which electrically connect the compressor to the electric power source board 32 can be connected and disconnected from the electric power source board. When it is necessary to replace the electric parts 31 and/or the fan motor 28, the blower unit 33 can therefore be taken out of the outdoor unit main body 1 from above after disconnecting the lead wires 34 with the electric connector 35.

[0051] Further, grooves 37 are formed as shown in FIG. 7 at locations where right and left ends 36 of the air guider 29 of the blower unit 33 are positioned. The right and left ends 36 can be fitted into these grooves from above while sliding them downward. The grooves 37 for holding the right and left ends 36 of the air guider 29 are wider upward. Accordingly, the blower unit 33 is held firmly with the grooves 37 when the air guider 29 is fitted into lowermost ends of the grooves 37. When the blower unit 33 is pulled up for taking it out, contact is low between the grooves 37 and the air guider 29, whereby the blower unit 33 can easily be displaced in a vertical direction.

[0052] Furthermore, a groove 39 is formed in the base plate 24 as shown in FIG. 8, whereby a lower end 38 of the air guider 29 of the blower unit 33 is fixed by the groove 39 and the blower unit 33 is positioned in a back-and-forth direction when the blower unit 33 is fitted into a lowermost end.

[0053] First, fitting portions 36a are formed on tops of the right and left ends 36 of the air guider 29 so as to correspond to the groove 37 and protruding portions 40 are formed in the back-and-forth direction of the fitting portions 36a as shown in FIG. 9. Concave portions 41 are formed in locations of the grooves 37 which are opposed to the protruding portions. When the air guider 29 of the blower unit 33 is fitted into the lowermost end and set in its regular position, the protruding portions 40 are

fitted into the concave portions 41 for positioning the air guider 29. The grooves 37 are slightly wider upward, thereby providing a function and an effect which are similar to those described with reference to the embodiment shown in FIG. 7.

[0054] Moreover, disposed under a ceiling plate 42 of the outdoor unit main body 1 is a partition plate 43 which partitions an upper portion of a wind circuit with a space 44 reserved between the ceiling plate 42 and the partition plate 43 as shown in FIGs. 10(a) and 10(b) so that pipes 45 connecting the outdoor unit to the indoor unit can be disposed within this space 44. Even when the pipes 45 are led to the outdoor unit main body 1 from a right or left side thereof, the pipes 45 can be led directly into the outdoor unit, thereby preventing an outside form of the outdoor unit main body 1 from being made unseemly by the pipes 45.

Claims

1. A discrete type air conditioner comprising:

an indoor unit and an outdoor unit configured to compose a refrigerating cycle and an electrical circuit by connecting said indoor unit and said outdoor unit with pipes and electric wires; main body side installation members (2a) attached to said outdoor unit, and
a wall surface side installation member (2b),
characterised in that each of said main body side installation member (2a) comprises a first hook-like connector (5) which is open downward and is formed on upper portions of said main body side installation members (2a); said wall surface side installation member (2b) comprising a second hook-like connector (8) which is open upward and is formed on an upper portion of said wall surface side installation member (2b),

wherein said wall surface side installation member is attachable to a house wall surface and said outdoor unit is installable on the wall surface in a suspended condition by engaging said first and second connectors (5 and 8) with each other.

2. A discrete type air conditioner according to claim 1, wherein said main body side installation members (2a) are disposed from an upper portion toward a lower portion of a rear surface of said outdoor unit and said first connectors (5) which are open downward are formed by folding back an upper end of each main body side installation member (2a) outward.

3. A discrete type air conditioner according to claim 1 or 2, wherein said main body side installation mem-

bers (2a) and said wall surface side installation member (2b) can be tightened to each other with tightening means.

4. A discrete type air conditioner according to any one of claims 1 through 3, wherein spacers (16) having a length adjustable with screws or similar means is disposed in a lower portion of said main body side installation members (2a).

5. A discrete type air conditioner according to claim 4, wherein said spacers (16) which is disposed in said lower portion of said main body side installation members (2a) are made of an elastic material such as rubber.

6. A discrete type air conditioner according to any one of claims 1 through 5, wherein a partition plate (21) which partitions an interior of said outdoor unit into a wind passage section (19) and a refrigerating cycle section (20) is fixed directly or by way of another part to a rear plate composing a rear surface and a base plate (24) composing a bottom surface of said outdoor unit.

7. A discrete type air conditioner according to claim 6, wherein said rear plate composing the rear surface and said base plate (24) composing the bottom surface of said outdoor unit are integrated with each other.

8. A discrete type air conditioner according to any one of claims 1 through 7, wherein a blower unit (33) of said outdoor unit equipped with a fan (27), an air guider (29) and an electric power source board (32) has an integral structure, and said blower unit can be taken out upward from said outdoor unit after a ceiling plate composing a ceiling surface of said outdoor unit is detached from said outdoor unit.

9. A discrete type air conditioner according to claim 8, wherein first grooves (37) are formed at locations where right and left ends of said air guider (29) for said blower unit (33) are positioned, and right and left ends of said air guider are fitted into said grooves.

10. A discrete type air conditioner according to claim 9, wherein said first grooves (37) into which said right and left ends of said air guider (29) for said blower unit (33) of said outdoor unit are fitted are getting wider from downside toward upside.

11. A discrete type air conditioner according to claim 10, wherein protruding portions (40) and concave portions (41) are formed on said right and left ends of said air guider (29) and in walls of said first grooves (37) in which said air guider is to be fitted,

in order for positioning said air guider when it is fitted into said outdoor unit in a regular position.

12. A discrete type air conditioner according to claim 8, wherein a second groove (39) is formed in a location of said base plate (24) with which a lower end of said air guider (29) for said blower (33) is brought into contact, so that said lower end of said air guider is fitted into and held by said second groove.

13. A discrete type air conditioner according to any one of claims 1 through 12, wherein lead wires (34) for connecting electric parts including a compressor (25) which are disposed in said outdoor unit and an electric power source board (32) can be connected to an electric connector (35) on said electric power source board.

14. A discrete type air conditioner according to any one of claims 1 through 13, wherein a partition plate (43) for partitioning an upper portion of a wind passage section (19) is disposed under a ceiling plate (42) and pipes (45) for connecting said outdoor unit to said indoor unit are disposed in a space (44) reserved by said partition plate.

Patentansprüche

1. Einzeltyp-Klimaanlage, die umfasst:

eine Innenraumeinheit und eine Außeneinheit, konfiguriert einen Kühlzyklus und einen elektrischen Schaltkreis durch Verbinden der Innenraumeinheit und der Außeneinheit mit Rohren und elektrischen Drähten zu bilden;

hauptteilseitige Installierungselemente (2a), befestigt an der Außeneinheit; und ein wandoberflächenseitiges Installierungselement (2b),

dadurch gekennzeichnet, dass

jedes der hauptteilseitigen Installierungselemente (2a) ein erstes, hakenähnliches Verbindungsstück (5) aufweist, das nach unten offen ist und an oberen Bereichen der hauptteilseitigen Installierungselemente (2a) ausgebildet ist;

das wandoberflächenseitige Installierungselement (2b) ein zweites, hakenähnliches Verbindungsstück (8) aufweist, das nach oben offen ist und an einem oberen Bereich des wandoberflächenseitigen Installierungselements (2b) ausgebildet ist, wobei das wandoberflächenseitige Installierungselement an einer Hauswandoberfläche befestigbar und die Außeneinheit an der Wandoberfläche in einem aufgehängten Zustand durch ein miteinander in-Eingriff-bringen der ersten und zweiten Verbin-

dungsstücke (5 und 8) installierbar ist.

2. Einzeltyp-Klimaanlage nach Anspruch 1, wobei die hauptteilseitigen Installierungselemente (2a) von einem oberen Bereich zu einem unteren Bereich einer Rückseite der Außeneinheit hin geneigt sind und die ersten Verbindungsstücke (5), die nach unten offen sind, durch Zurückfallen eines oberen Endes jedes hauptteilseitigen Installierungselements (2a) nach außen gebildet sind.
3. Einzeltyp-Klimaanlage nach Anspruch 1 oder 2, wobei die hauptteilseitigen Installierungselemente (2a) und das wandoberflächenseitige Installierungselement (2b) miteinander mittels Befestigungsmittel befestigt werden können.
4. Einzeltyp-Klimaanlage nach einem der Ansprüche 1 bis 3, wobei Abstandsteile (16), die eine Länge haben, die mittels Schrauben oder ähnlichen Mitteln einstellbar sind, in einem unteren Bereich der hauptgehäuseseitigen Installierungselemente (2a) angeordnet sind.
5. Einzeltyp-Klimaanlage nach Anspruch 4, wobei die Abstandsteile (16), die in dem unteren Bereich der hauptgehäuseseitigen Installierungselemente (2a) angeordnet sind, aus einem elastischen Material, wie beispielsweise Gummi, hergestellt sind.
6. Einzeltyp-Klimaanlage nach einem der Ansprüche 1 bis 5, wobei eine Unterteilungsplatte (21), die einen Innenraum der Außeneinheit in einen Luftdurchgangsabschnitt (19) und einen Kühlzyklusabschnitt (20) unterteilt, direkt oder mittels eines anderen Teils an einer hinteren Platte, die eine hintere Fläche einer Grundplatte (24) bildet, die eine Bodenfläche der Außeneinheit bildet, befestigt ist.
7. Einzeltyp-Klimaanlage nach Anspruch 6, wobei die hintere Platte, die die hintere Fläche bildet, und die Grundplatte (24), die die Bodenfläche der Außeneinheit bildet, miteinander integriert sind.
8. Einzeltyp-Klimaanlage nach einem der Ansprüche 1 bis 7, wobei eine Gebläseeinheit (33) der Außeneinheit, ausgestattet mit einem Lüfter (27), einer Luftführungseinrichtung (29) und einer Leiterplatte (32) einer elektrischen Energieversorgungsquelle, eine integrale Struktur besitzt, und die Gebläseeinheit nach oben von der Außeneinheit herausgenommen werden kann, nachdem eine Deckenplatte, die eine Deckenfläche der Außeneinheit bildet, von der Außeneinheit abgenommen ist.
9. Einzeltyp-Klimaanlage nach Anspruch 8, wobei erste Nuten (37) an Stellen gebildet sind, wo rechte und linke Enden der Luftführungseinrichtung (29)

für die Gebläseeinheit (33) positioniert sind, und rechte und linke Enden der Luftführungseinrichtung in die Nuten hinein eingepasst befestigt sind.

10. Einzeltyp-Klimaanlage nach Anspruch 9, wobei die ersten Nuten (37), in denen die rechten und linken Enden der Luftführungseinrichtung (29) für die Gebläseeinheit (33) der Außeneinheit eingepasst befestigt sind, breiter von der Unterseite zu der Oberseite hin werden.
11. Einzeltyp-Klimaanlage nach Anspruch 10, wobei vorspringende Bereiche (40) und konkave Bereiche (41) an dem rechten und dem linken Ende der Luftführungseinrichtung (29) und in Wänden der ersten Nuten (37), in denen die Luftführungseinrichtung eingepasst befestigt werden soll, gebildet sind, um die Luftführungseinrichtung zu positionieren, wenn sie in die Außeneinheit in einer regulären Position eingepasst befestigt ist.
12. Einzeltyp-Klimaanlage nach Anspruch 8, wobei eine zweite Nut (39) in einer Stelle der Grundplatte (24) gebildet ist, mit der ein unteres Ende der Luftführungseinrichtung (29) für das Gebläse (33) in Kontakt gebracht wird, so dass das untere Ende der Luftführungseinrichtung in die zweite Nut eingepasst befestigt und dadurch gehalten ist.
13. Einzeltyp-Klimaanlage nach einem der Ansprüche 1 bis 12, wobei Leitungsdrähte (34) zum Verbinden elektrischer Teile, umfassend einen Kompressor (25), die in der Außeneinheit angeordnet sind, und einer elektrischen Energieversorgungsleiterplatte (32) mit einem elektrischen Verbindungsstück (35) an der Leiterplatte der elektrischen Energieversorgung verbunden werden können.
14. Einzeltyp-Klimaanlage nach einem der Ansprüche 1 bis 13, wobei eine Unterteilungsplatte (43) zum Unterteilen eines oberen Bereichs eines Luftdurchgangsabschnitts (19) unter einer Deckenplatte (32) angeordnet ist und Rohrleitungen (45) zum Verbinden der Außeneinheit mit der Innenraumeinheit in einem Raum (44), reserviert durch die Unterteilungsplatte, angeordnet sind.

Revendications

1. Dispositif de climatisation du type discret, comprenant :

une unité d'intérieur et une unité d'extérieur, configurées de façon à former un cycle de réfrigération et un circuit électrique en connectant ladite unité d'intérieur et ladite unité d'extérieur par le biais de conduites et de fils électriques ;

des organes de montage situés du côté du corps principal (2a), fixés à ladite unité d'extérieur ; et

un organe de montage situé du côté de la surface murale (2b), **caractérisé en ce que** chacun desdits organes de montage situés du côté du corps principal (2a) comprend un premier connecteur en forme de crochet (5) ouvert sur le dessous et formé au niveau de parties supérieures desdits organes de montage situés du côté du corps principal (2a), ledit organe de montage situé du côté de la surface murale (2b) comprenant un deuxième connecteur en forme de crochet (8) ouvert sur le dessus et formé au niveau d'une partie supérieure dudit organe de montage situé du côté de la surface murale (2b) ,

dans lequel ledit organe de montage situé du côté de la surface murale peut être fixé à la surface murale d'une maison et dans lequel ladite unité d'extérieur peut être montée sur la surface murale de façon suspendue en engrenant lesdits premier et deuxième connecteurs (5 et 8) l'un dans l'autre.

2. Dispositif de climatisation du type discret selon la revendication 1, dans lequel lesdits organes de montage situés du côté du corps principal (2a) sont disposés à partir d'une partie supérieure vers une partie inférieure d'une surface arrière de ladite unité d'extérieur et dans lequel lesdits premiers connecteurs (5) ouverts sur le dessous sont formés par pliage vers l'extérieur d'une extrémité supérieure de chacun des organes de montage situés du côté du corps principal (2a).
3. Dispositif de climatisation du type discret selon la revendication 1 ou 2, dans lequel lesdits organes de montage situés du côté du corps principal (2a) et ledit organe de montage situé du côté de la surface murale (2b) peuvent être serrés l'un avec l'autre à l'aide de moyens de serrage.
4. Dispositif de climatisation du type discret selon l'une quelconque des revendication 1 à 3, dans lequel des entretoises (16) dont la longueur peut être ajustée à l'aide de vis ou de moyens similaires sont disposées dans une partie inférieure desdits organes de montage situés du côté du corps principal (2a).
5. Dispositif de climatisation du type discret selon la revendication 4, dans lequel lesdites entretoises (16) disposées dans ladite partie inférieure desdits organes de montage situés du côté du corps principal (2a) se composent d'un matériau élastique tel que le caoutchouc.
6. Dispositif de climatisation du type discret selon l'une

quelconque des revendications 1 à 5, dans lequel une plaque de cloisonnement (21) permettant de cloisonner l'intérieur de ladite unité d'extérieur en une section de passage du vent (19) et en une section de cycle de réfrigération (20) est fixée directement ou au moyen d'une autre pièce à une plaque arrière formant une surface arrière et à une plaque de base (24) formant une surface de fond de ladite unité d'extérieur.

7. Dispositif de climatisation du type discret selon la revendication 6, dans lequel ladite plaque arrière formant la surface arrière et ladite plaque de base (24) formant la surface de fond de ladite unité d'extérieur sont incorporées l'une dans l'autre.
8. Dispositif de climatisation du type discret selon l'une quelconque des revendications 1 à 7, dans lequel une unité de ventilation (33) de ladite unité d'extérieur, équipée d'un ventilateur (27), d'un guide d'air (29) et d'un tableau de source d'énergie électrique (32), possède une structure intégrale et dans lequel ladite unité de ventilation peut être retirée de ladite unité d'extérieur par le dessus, après qu'une plaque de plafond formant une surface de plafond de ladite unité d'extérieur a été détachée de ladite unité d'extérieur.
9. Dispositif de climatisation du type discret selon la revendication 8, dans lequel des premières rainures (37) sont formées aux endroits où sont positionnées les extrémités droite et gauche dudit guide d'air (29) pour ladite unité de ventilation (33), et dans lequel les extrémités droite et gauche dudit guide d'air sont logées dans lesdites rainures.
10. Dispositif de climatisation du type discret selon la revendication 9, dans lequel lesdites premières rainures (37) dans lesquelles sont logées lesdites extrémités droite et gauche dudit guide d'air (29) pour ladite unité de ventilation (33) de ladite unité d'extérieur s'élargissent de bas en haut.
11. Dispositif de climatisation du type discret selon la revendication 10, dans lequel des parties saillantes (40) et des parties concaves (41) sont formées sur lesdites extrémités droite et gauche dudit guide d'air (29) ainsi que dans des parois desdites premières rainures (37) dans lesquelles doit être logé ledit guide d'air, afin de positionner ledit guide d'air lorsqu'il est logé dans ladite unité d'extérieur, dans une position permanente.
12. Dispositif de climatisation du type discret selon la revendication 8, dans lequel une seconde rainure (39) est formée à un endroit de ladite plaque de base (24) avec lequel est mise en contact une extrémité inférieure dudit guide d'air (29) pour ladite unité

de ventilation (33), de telle sorte que ladite extrémité inférieure dudit guide d'air est logée dans et maintenu par ladite seconde rainure.

13. Dispositif de climatisation du type discret selon l'une quelconque des revendications 1 à 12, dans lequel des fils conducteurs (34) permettant de connecter des composants électriques incluant un compresseur (25), disposés dans ladite unité d'extérieur, et un tableau de source d'énergie électrique (32), peuvent être connectés à un connecteur électrique (35) sur ledit tableau de source d'énergie électrique. 5 10
14. Dispositif de climatisation du type discret selon l'une quelconque des revendications 1 à 13, dans lequel une plaque de cloisonnement (43) permettant de cloisonner une partie supérieure d'une section de passage du vent (19) est disposée sous une plaque de plafond (42) et dans lequel des conduites (45) permettant de relier ladite unité d'extérieur à ladite unité d'intérieur sont disposées dans un espace (44) formé par ladite plaque de cloisonnement. 15 20

25

30

35

40

45

50

55

FIG. 1

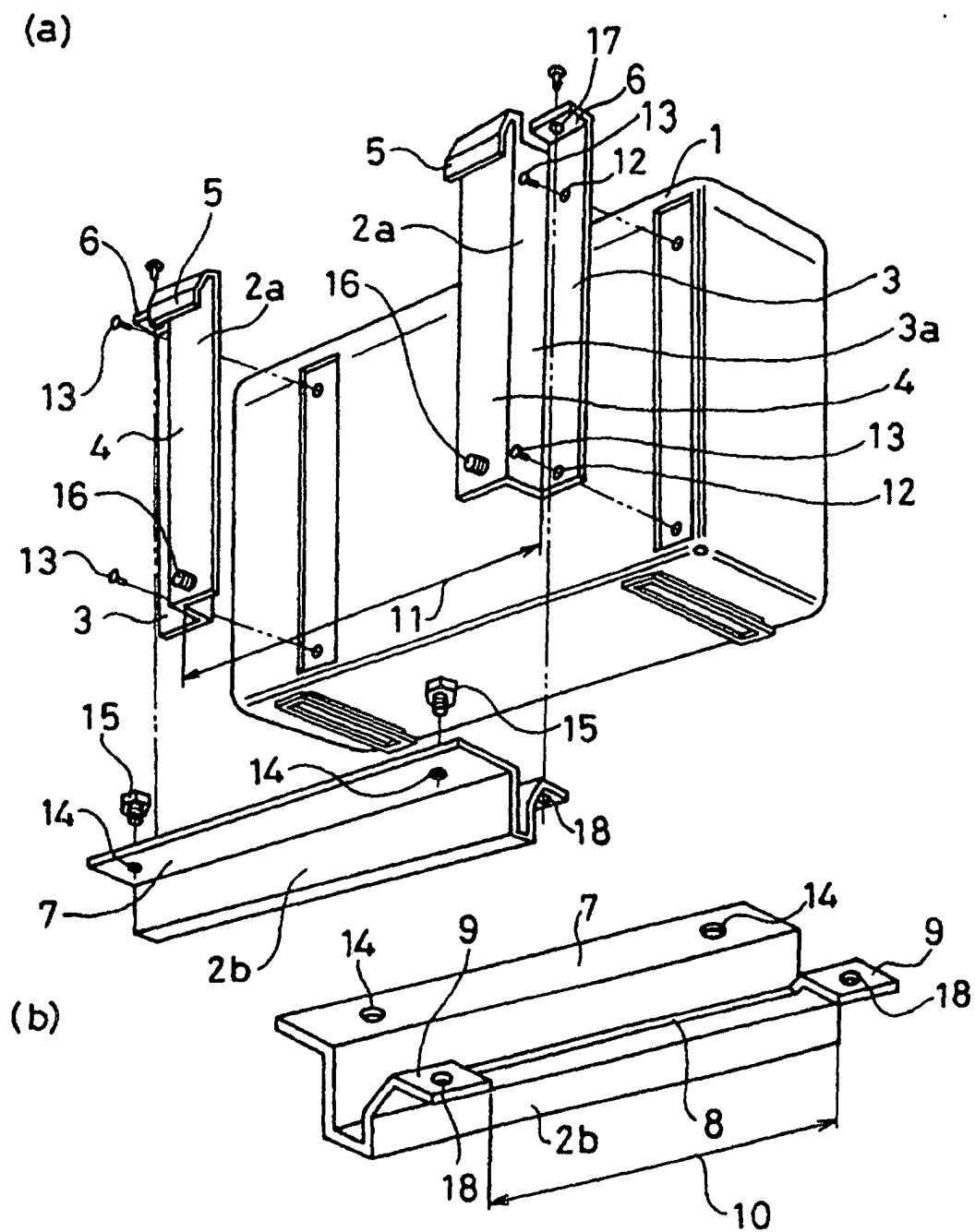


FIG.2

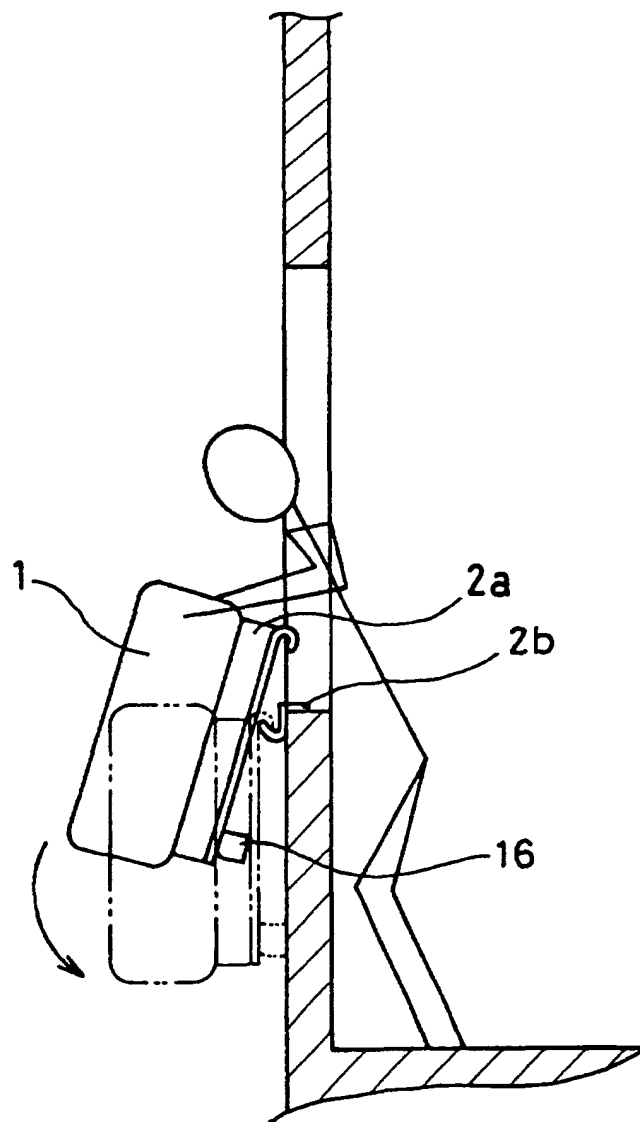


FIG.3

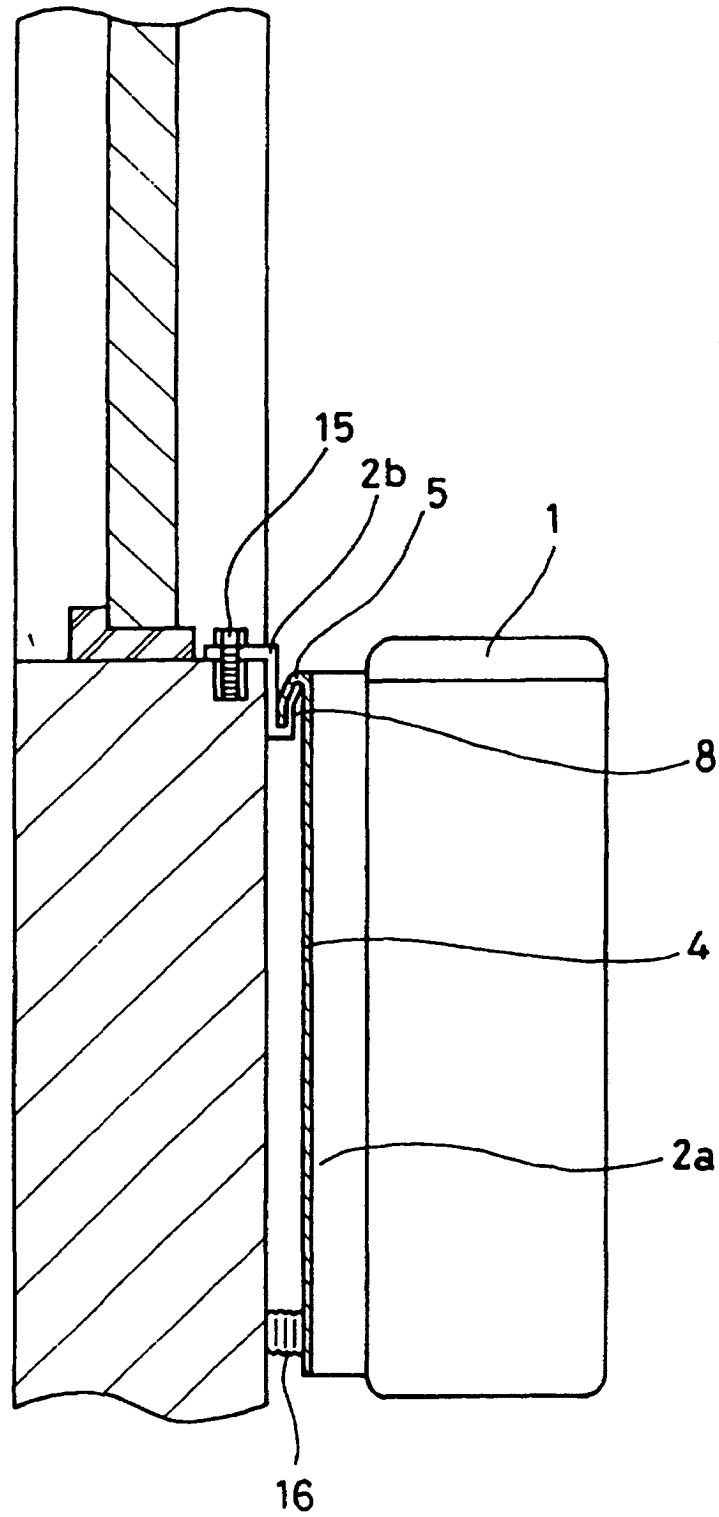


FIG.4

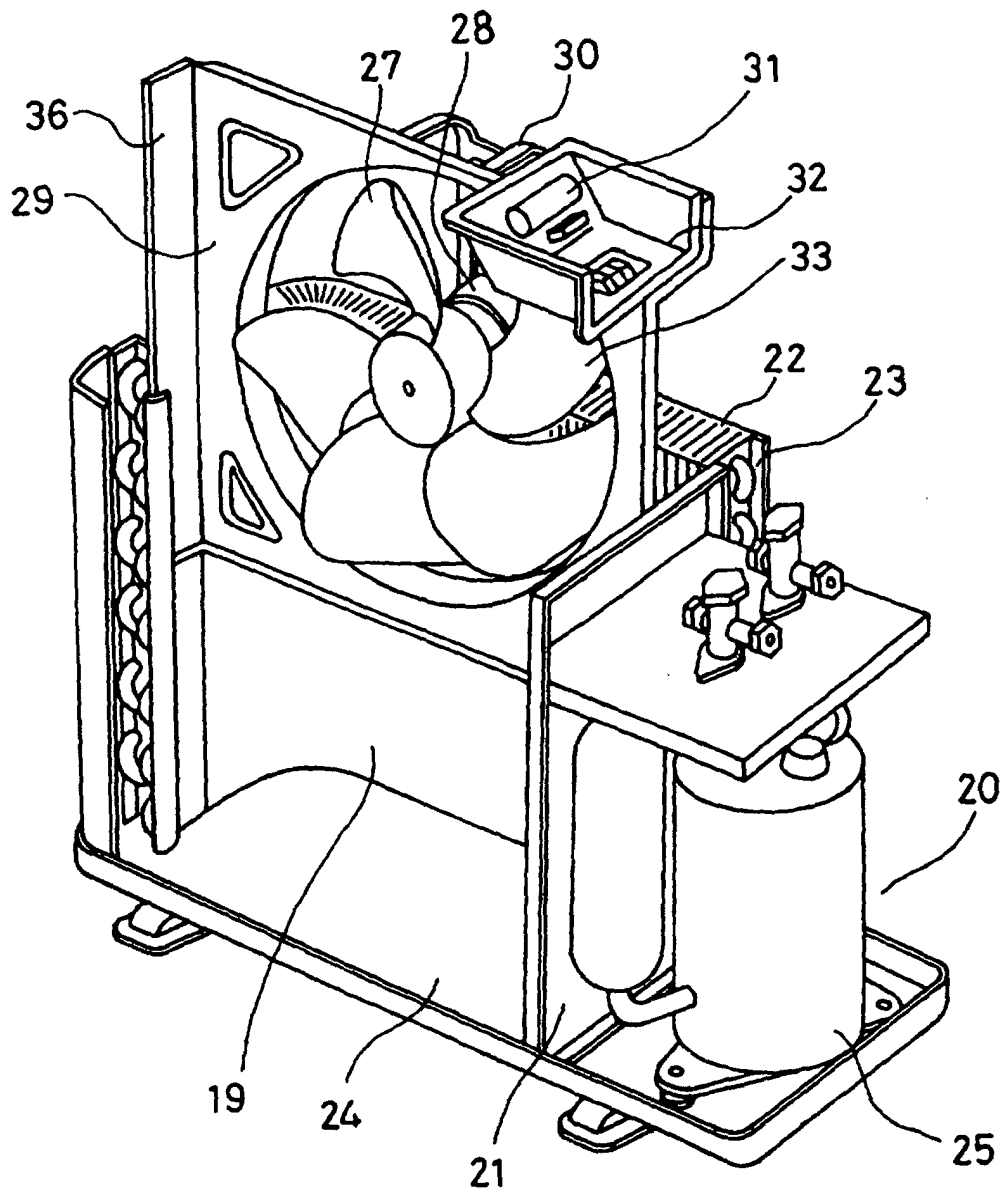
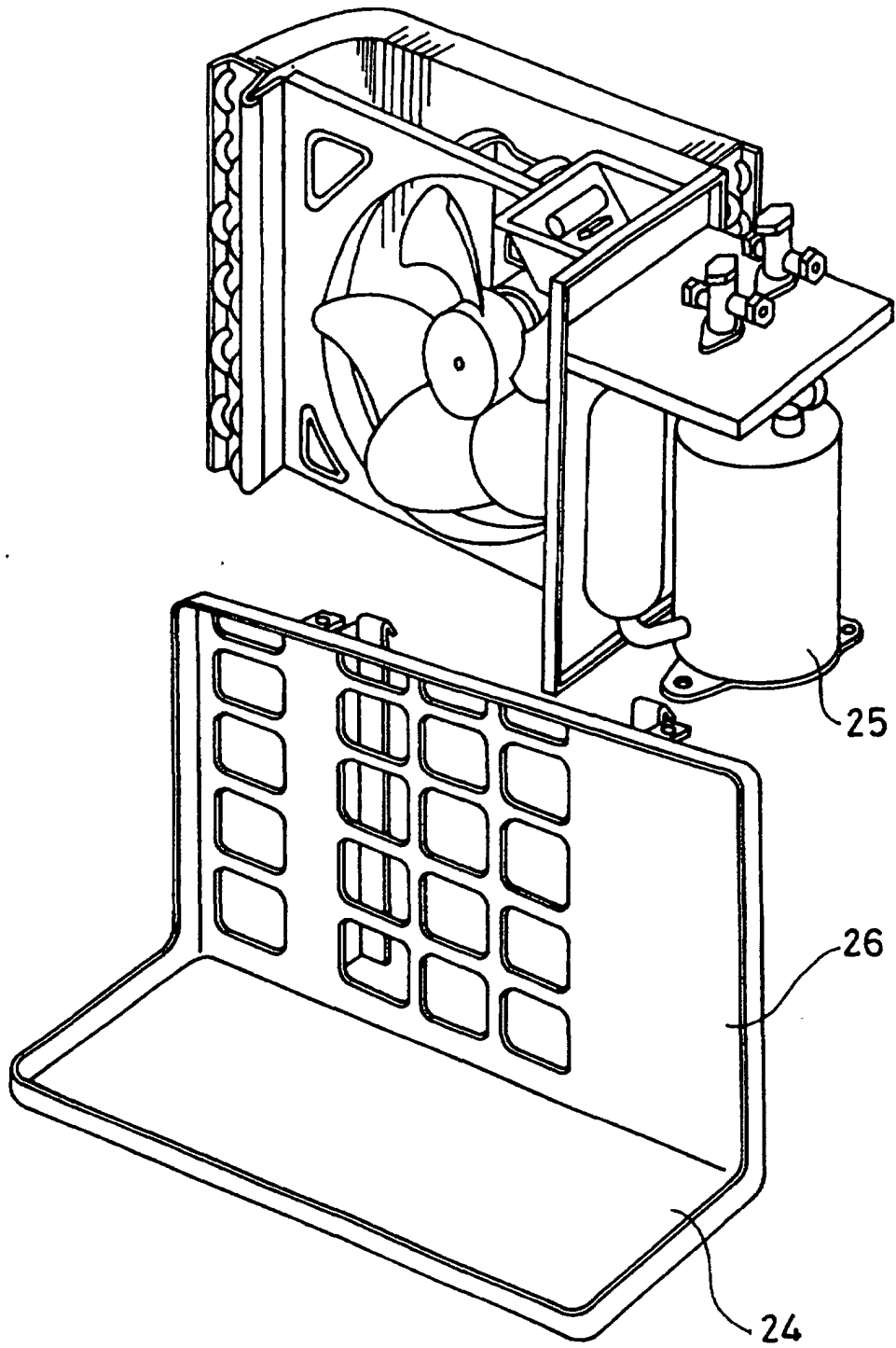


FIG. 5



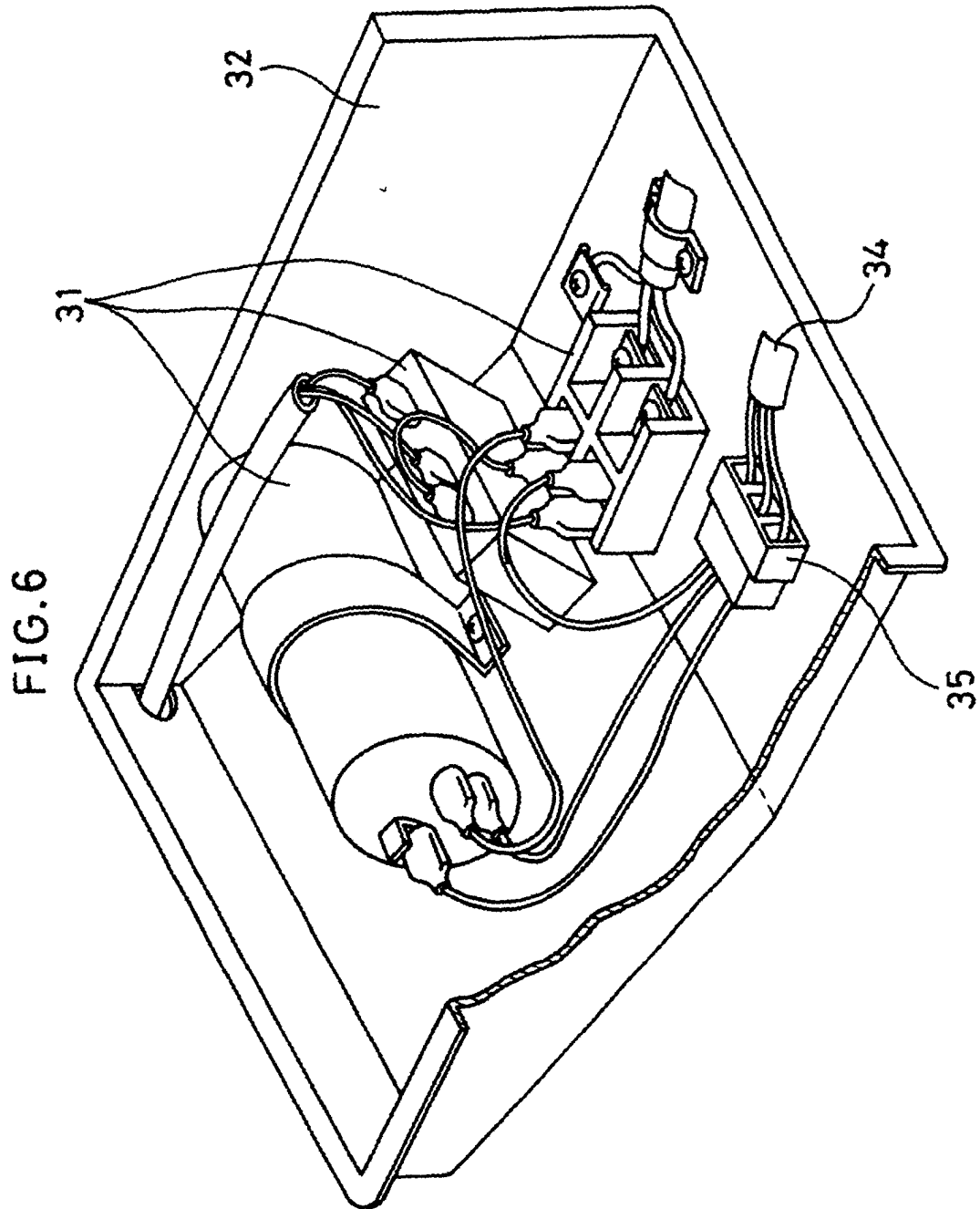


FIG. 7

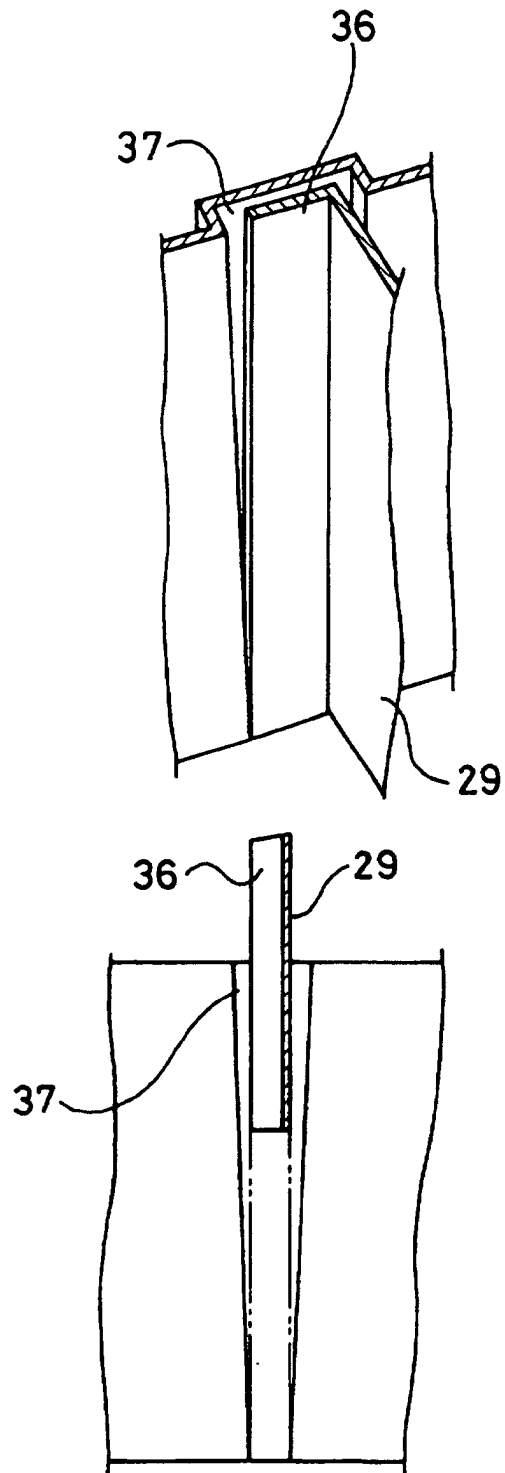


FIG. 8

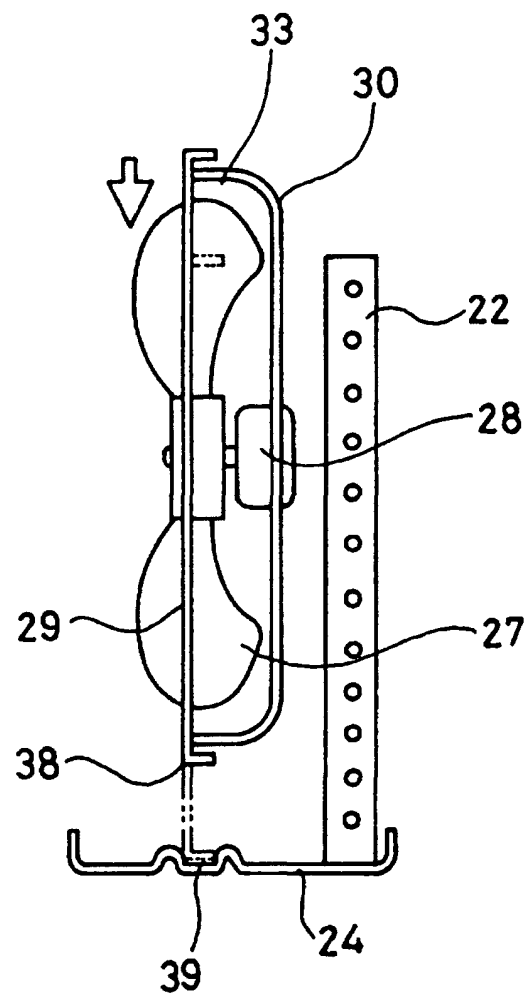


FIG. 9

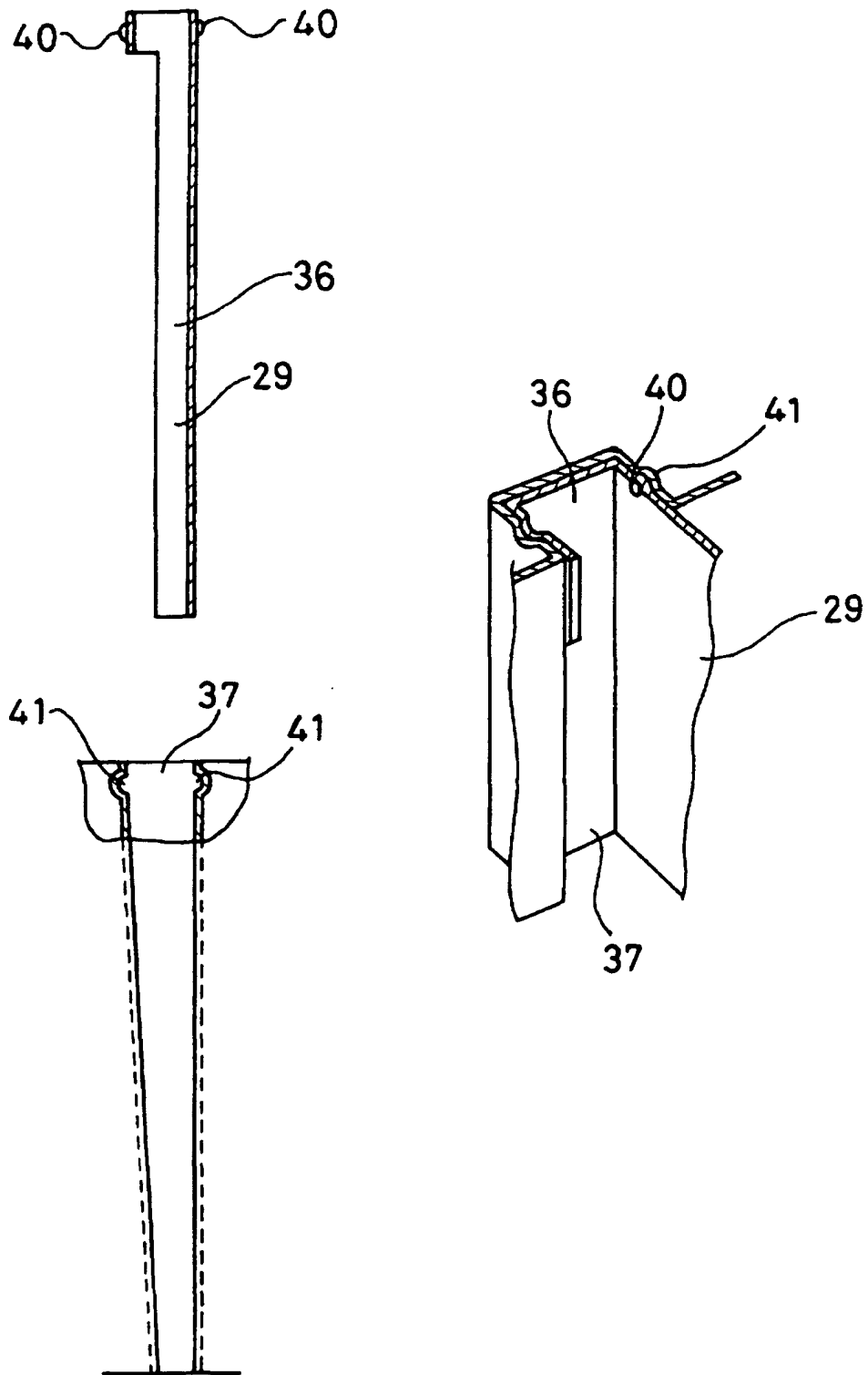
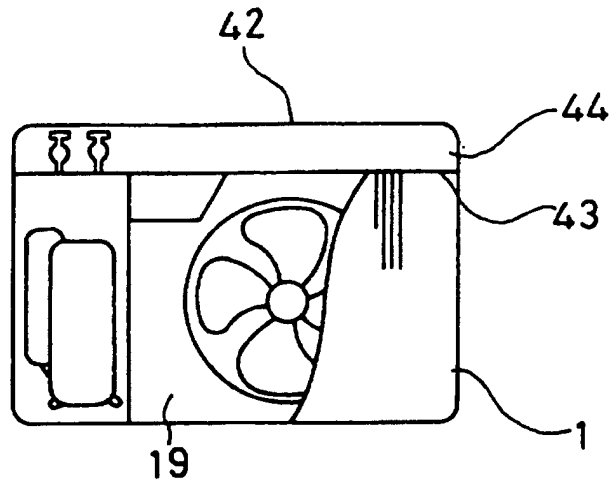


FIG .10

(a)



(b)

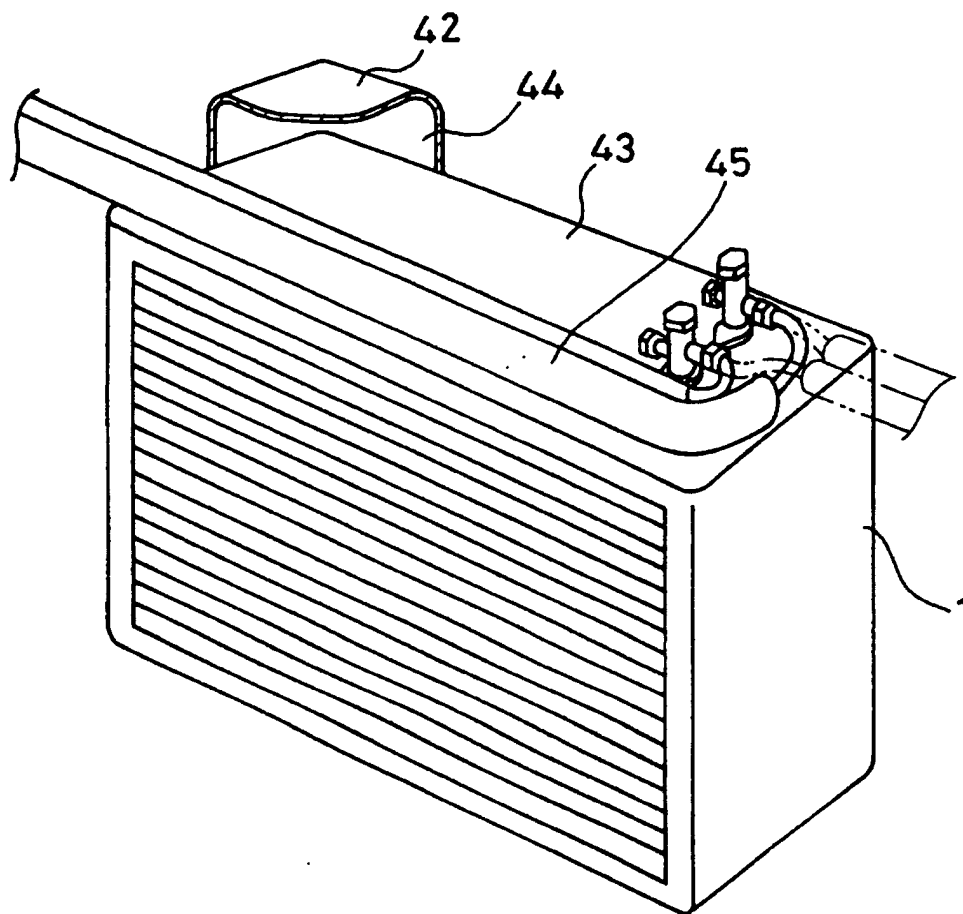


FIG.11

